Alpha Sentry Continuous Air Monitor

SUMMARY

The Alpha Sentry Continuous Air Monitor (Alpha Sentry CAM) provides a means for workspace monitoring in plutonium-contaminated areas. A patented diffusion screen removes 95% of the unattached radon daughters from the air sample. A spectroscopic algorithm effectively subtracts the radon daughter interference from the transuranic region of interest. The Alpha Sentry CAM system is able to monitor up to eight sampling locations from a single operator interface.

Alpha Sentry CAM systems were phased into use at the 233-S Facility between March and July 1999.

INNOVATIVE TECHNOLOGY DESCRIPTION

The Alpha Sentry CAM is a multi-channel continuous air monitor for alpha contamination. Several features of this system enhance detection and warning capabilities in an alpha environment:

- The system design removes attached radon from the air stream, which effectively eliminates 95+% of the background normally seen on alpha CAM systems. This increases the reliability of the system, eliminating false alarms due to fluctuating radon levels.
- The solid-state alpha spectrometer used as the detector in the system allows the user to customize the system settings based on the alpha-emitting isotopes of interest in the facility.
- The introduction of a system controller that allows remote monitoring of up to eight air monitoring heads at once increases the warning capabilities of the system. The controller provides real-time air monitoring capabilities of work areas. Airborne levels can be checked before entering the work space.
- The controller readout can be set to provide airborne contamination levels in derived air concentration (DAC) or DAC-hr, eliminating computations by workers.

BASELINE DESCRIPTION

The baseline technique for downposting an area for alpha contamination was to collect air samples that had to be decayed for up to 72 hours before a definitive determination of the airborne contamination levels could be made.

DEPLOYMENT DESCRIPTION

The Alpha Sentry CAM was deployed at the 233-S Facility as part of decommissioning efforts. The system was phased into use in multiple locations between March and July 1999.

DETAILS OF BENEFITS

Since deployment, it is estimated that the system has paid for itself by eliminating the need to delay downposting of areas. In the past, air samples collected for this purpose have had to be decayed for up to 72 hours before a definitive determination of the airborne contamination levels could be made. Due to the radon discrimination capabilities of the Alpha Sentry CAMs, downposting determinations can be made instantaneously, because the system is constantly monitoring the airborne levels of the isotope of interest.

CONTACTS

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